MANUAL CHANGES

MODEL 141T

OSCILLOSCOPE

Manual Serials Prefixed: 950–
Manual Printed: OCT 1970

Make all changes listed as Errata. Check the following table for your instrument serial prefix and/or serial number and make listed change(s) to the manual:

Serial Prefix or Number	Make Changes
973–	1
1047A	1, 2
1112A	1, 2, 3
1113A	1, 2, 3, 4
1141A	1, 2, 3, 4, 5
1145A	1, 2, 3, 4, 5, 6,
1147A	1, 2, 3, 4, 5, 6, 7
1218A	1, 2, 3, 4, 5, 6, 7, 8
1223A, 1232A	1, 2, 3, 4, 5, 6, 7, 8, 9

Serial Prefix or Number	Make Changes

Supplement A for
00141-90909

4 August 1972
Δ = Latest additions to this change sheet.
This change sheet supersedes all prior change sheets for this manual.

ERRATA

Page 1-2, Paragraph 1-11, Line 8,
Change upper to lower and lower to upper.

Page 3-2, Figure 3-1, Step 13,
Change to read: 13. BEAM FINDER: Returns beam to CRT screen regardless of deflection potentials when used with 1400-series time-domain plug-ins. When used with 8550-series frequency-domain plug-ins, the BEAM FINDER has no function.

Page 3-6, Paragraph 3-29, Step h,
Change: To erase all persistent of stored displays,
to: To erase stored displays.

Page 4-1, Paragraph 4-2, Line 5,
Change to A6Q1/A6Q2.

Page 4-2, Paragraph 4-11, Line 1,
Change to Figure 8-6.

Page 4-2, Paragraph 4-12,
Change: the voltage across A2R21 and A2V1, to: the voltage across A2V1.

Page 4-2, Paragraph 4-17, Line 2,
Change to Figure 8-6.

Page 4-2, Paragraph 4-18,
Change: voltage is thus at a level set by voltage divider A2R52, A2R54 and A2R55, to: voltage is at a level set by breakdown diode A2CR20 and A2R53.

Page 4-3, Paragraphs 4-22 and 4-27, Line 1,
Change to Figure 8-9.

Page 4-3, Paragraph 4-28,
Change A603Q603 to A6Q1.
Change A603Q604 to A6Q2.

Page 4-5, Paragraph 4-37, Line 1,
Change to Figure 8-12.

Page 5-1, Paragraph 5-9,
Add: Note: The BEAM FINDER returns beam to CRT screen regardless of deflection potentials when used with the 1400-series time-domain plug-ins. When used with the 8550-series frequency-domain plug-ins, the BEAM FINDER has no function.

Page 5-3, Paragraph 5-34, Step c,
Change to: c. Monitor voltage at yellow (4) wire (junction of R83 and R85) and set high voltage adjust to obtain a reading exactly equivalent to the result obtained in step b (approximately −2350V ±25V).

Page 5-6, Figure 5-4,
Change: A603 to A6.

Page 6-2, Table 6-2,
A603: Change to A6.
B1: Change to HP Part No. 3160-0218.
DS1: Change to HP Part No. 1450-0419.

Page 6-3, Table 6-2,
MP13: Change to HP Part No. 5060-8742.
MP18: Change to HP Part No. 00141-60202.
Delete: MP19.
Delete: MP35-MP36.
MP49: Change to HP Part No. 5060-0504.

Page 6-4, Table 6-2,
MP57: Change to HP Part No. 00140-00601.
MP95-MP96: Change to HP Part No. 5000-0408.
Delete: MP104.

Page 6-4, Table 6-2, (Cont'd)
Q1: Change to HP Part No. 1853-0252, Q, Si pnp.
Add: MP115-MP118, HP Part No. 5040-0447, TQ 4, Foot: rear, long.

Page 6-5, Table 6-2,
R5: Change to HP Part No. 2100-2962, R: var 1.5 megohms 30% 1/2W.
S1: Change to HP Part No. 3101-0030.
S4: Change to HP Part No. 3101-1234, S: Slide DPDT.
Delete: W7-W8.
Add: W10, HP Part No. 00141-61627, TQ 1, W: cable assy, special.
A1: Change to HP Part No. 00141-66515.

Page 6-6, Table 6-2,
A2CR12: Change to HP Part No. 1902-3385.
A2CR26, A2CR27: Change to HP Part No. 1901-0436, CR: Si.
A2Q1: Change to HP Part No. 1854-0005, Q: npn Si 2N708.
A2Q2: Change to HP Part No. 1853-0036, Q: pnp Si 2N3906.

Page 6-7, Table 6-2,
A2Q12: Change to HP Part No. 1850-0099, Q: Ge 2N964.
A2Q14: Change to HP Part No. 1853-0034, Q: pnp Si.
A2R5: Change to HP Part No. 0683-1015, R: fxd met flm 100 ohms 5% 1/4W.
A2R31: Change to HP Part No. 0757-0370, R: fxd metflm 49.9 kilohms 1% 1/2W.
A2R35: Change to HP Part No. 0757-0044; R: fxd metflm 33.2 kilohms 1% 1/2W.
(A2R31 and A2R35 must be replaced as a set for proper results.)

Page 6-8, Table 6-2,
A2R52: Change to HP Part No. 0761-0075, R: fxd metox 16 kilohms 5% 1W.
A2R56: Change to HP Part No. 0684-3331, R: fxd comp 33 kilohms 10% 1/4W.
A2R57: Change to HP Part No. 0758-0054, R: fxd metflm 330 ohms 5% 1/4W.
A2R63: Change to HP Part No. 2100-0096, R: var 1 megohm 30% 0.1W.
A2R65: Change to HP Part No. 2100-2108, R: var 1.5 megohms 30% 0.1W.

Page 6-9, Table 6-2,
A3R2: Change to HP Part No. 0687-1051.
A3W1: Change to HP Part No. 00141-61630, W: lead, post-accelerator.

Page 6-10, Table 6-2,
A5Q13: Change to HP Part No. 1854-0234, Q: npn Si 2N3440.
A5R1: Change 301 kilohms to 221 kilohms.

Page 6-12, Table 6-2,
A603: Change to A6.
A603C1: Change to A6C1, HP Part No. 0150-0052, C: fxd my 0.05 uF 5% 200 wVdc.
A603C2: Change to A6C2.
A603Q1-A603Q2: Change to A6Q1-A6Q2.

ERRATA (Cont'd)

Page 6-12, Table 6-2, (Cont'd)
A603R1-A603R2: Change to A6R1-A6R2, HP Part No. 0757-0401, R: fxd metflm 100 ohms 1% 1/8W.
A603R3-A603R4: Change to A6R3-A6R4.
A603R5: Change to A6R5.

Page 7-1/7-2, Table 7-2,
HP Part No. 1250-0018: Change to HP Part No. 1250-0083.

Page 8-2, Paragraph 8-19,
Delete: Check voltages at P1, shown in Figure 8-2, to detect possible supply voltage troubles.

Page 8-9, Figure 8-6,
A2R5: Change value to 100 ohms.
A2R11: Change value to 7K.
A2R31: Change value to 49.9K.
A2R35: Change value to 33.2K.
A2R37: Change value to 5K.

Page 8-9, Figure 8-6, (Cont'd)
A2R52: Change value to 16K.
Change reference designator F4-F3, on assembly A2, to F3.
Delete V1 filament, connected between pins 14 and 15 of power transformer, T1.

Page 8-11, Figure 8-9,
A2R56: Change value to 33K.
A2R57: Change value to 330 ohms.
A2R63: change value to 1M.
A2R65: Change value to 1.5M.
A603 HORIZONTAL DRIVERS Q603/Q604: Change to A6 HORIZONTAL DRIVERS Q1/Q2.
A603C624: Change reference designator to A6C2.
A603C625: Change reference designator to A6C1.
A603Q603: Change reference designator to A6Q1.
A603Q604: Change reference designator to A6Q2.
A603R654: Change reference designator to A6R3.
A603R655: Change reference designator to A6R4.
A603R656: Change reference designator to A6R1.
A603R657: Change reference designator to A6R2.
A603R658: Change reference designator to A6R5.
Change reference at collector of A6Q2 to read: from collector A6Q1.

Page 8-13/8-14, Figure 8-12,
A5R48: Change value to 68K.
Delete dc voltage references at the collector of A5Q7 and A5Q8.

CHANGE 1

Page 6-9, Table 6-2,
A3R1: Change to HP Part No. 0698-7804, R: fxd comp 30 megohms 5% 2W.

Page 8-11, Figure 8-9,
A3R1: Change value to 30M.

CHANGE 2

Page 4-2, Paragraph 4-15,
Line 10: Change A2R42 to R11.
Page 6-2, Table 6-2,
A2: Change to HP Part No. 00141-66518.
Page 6-5, Table 6-2,
Add: R11, HP Part No. 0811-2994, TQ 1, R: fxd ww 0.27 ohms 3% 5W.

Page 6-5, Table 6-2, (Cont'd)
V1: Change to HP Part No. 5083-9095.
A2: Change to HP Part No. 00141-66518.
Page 6-8, Table 6-2,
Delete: A2R42.
Page 8-8, Figure 8-4,
Delete: R42.
Page 8-9, Figure 8-6,
Delete: R42.
Add: R11, 0.27-ohm resistor, from the emitter of Q4 to ground.

CHANGE 3

Page 6-3, Table 6-2,
MP18: Change to HP Part No. 00141-60203.
FL1: Change to HP Part No. 9100-3173.
J3: Change to HP Part No. 1251-2357.

Page 6-5, Table 6-2,
S4: Change to HP Part No. 3101-1234.
W1: Change to HP Part No. 8120-1545.

CHANGE 4

Page 6-3, Table 6-2,
Add: J10, HP Part No. 1251-1286, TQ 1, J: 12-contact female. (On rear panel.)
J11, HP Part No. 1251-2214, TQ 1, J: 12-contact male, p/o W11. (On vertical deck.)
J12-J14, HP Part No. 1251-0179, TQ 3, J: coaxial, p/o W11. (On rear panel.)
J15-J17, HP Part No. 1251-0180, TQ 3, J: connector, p/o W11. (On vertical deck.)

Page 6-5, Table 6-2,
Add: W11, HP Part No. 5060-0521, TQ 1, W: cable assy, special, includes:
HP Part No. 0510-0089, TQ 2, Ring: retainer.
HP Part No. 00140-23101, TQ 2, Pin: guide.

CHANGE 5

Page 6-3, Table 6-2,
MP3: Change to HP Part No. 00141-60205.
MP6: Change to HP Part No. 5060-8735.
MP14: Change to HP Part No. 5000-8727.
MP16: Change to HP Part No. 5060-8589.

Page 6-3, Table 6-2, (Cont'd)
MP17: Change to HP Part No. 5060-8713.
MP22: Change to HP Part No. 00140-24710.
MP23: Change to HP Part No. 00140-24711.
MP49: Change to HP Part No. 5060-05333.

CHANGE 6

Page 6-2, Table 6-2,
A2: Change to HP Part No. 00141-66519.
B1: Change to HP Part No. 3160-0252.
Page 6-5, Table 6-2,
A2: Change to HP Part No. 00141-66519.
Page 6-8, Table 6-2,
A2R86: Add HP Part No. 0698-6286, TQ 1, R: fxd comp 100 megohm 10% 1/4W.

Page 8-8, Figure 8-4,
Add: R86, Grid Loc 1-6, connected on one end at the junction of C19, R83, R85 and the other end at the junction of CR28, V2.
Page 8-11, Figure 8-9,
Add: R86 100M in parallel with the series string V2, V3, V4.

CHANGE 7

Page 5-6, Figure 5-4,
Identify the feet on the rear as MP129.

Page 6-4, Table 6-2
Add: MP129, HP Part No. 00141-21001, TQ 4, Feet: rear long.

CHANGE 8

Page 6-2, Table 6-2,
A5: Change to HP Part No. 00141-66520, A: pulse circuit board assy.
Page 6-5, Table 6-2,
V1: Change to HP Part No. 5083-9205, V: cathode-ray storage tube.
Page 6-9, Table 6-2,
Delete: A5C9.
Add: A5C14, HP Part No. 0160-0157, C: fxd my 4700 pF 10% 200V.
Add: A5C15, A5C16, HP Part No. 0180-1735, C: fxd elect 0.22 uF 10% 35V.
Add: A5C17, HP Part No. 0150-0052, C: fxd cer 0.05 uF 20% 400V.
Page 6-10, Table 6-2,
Add: A5CR28, A5CR29, HP Part No. 1901-0040, CR: Si.
Add: A5Q18, A5Q19, A5Q20, A5Q21, A5Q22, HP Part No. 1854-0071, Q: non Si.
Δ A5R7: Change to HP Part No. 0684-2231, TQ3, R: fxd comp 22 kilohms 10% 1/4W.
Page 6-11, Table 6-2,
Delete A5R39, A5R40.

Page 6-12, Table 6-2,
Add: A5R65, HP Part No. 0684-1041, R: fxd metflm 100 kilohms 10% 1/4W.
Add: A5R66, A5R74, HP Part No. 0684-2231, R: fxd metflm 22 kilohms 10% 1/4W.
Add: A5R67, A5R69, A5R72, A5R75, HP Part No. 0684-4721, R: fxd metflm 4.7 kilohms 10% 1/4W.
Add: A5R68, A5R71, HP Part No. 0684-6831, R: fxd metflm 68 kilohms 10% 1/4W.
Add: A5R70, A5R73, HP Part No. 0684-3321, R: fxd comp 3.3 kilohms 10% 1/4W.
Add: A5R76, HP Part No. 0683-1555, R: fxd comp 1.5 megohms 5% 1/4W.
Add: A5R77, A5R80, HP Part No. 0684-1021, R: fxd comp 1.0 kilohm 10% 1/4W.
Page 8-12, Figure 8-10,
Replace Figure 8-10 with new Figure 8-10 provided as part of this change sheet.
Page 8-13/8-14, Figure 8-12,
Replace Figure 8-12 with new Figure 8-12 provided as part of this change sheet.

CHANGE 9

Page 1-0, Table 1-1,
Change Power Requirements to: 100, 120, 220 or 240 volts (+5 to −10%), 48 to 440 Hz, normally less than 285 watts (varies with plug-in units).
Page 2-1, Paragraph 2-11,
Replace with the following: The instrument requires a power source of 100, 120, 220 or 240 volts (+5 to −10%), single phase, 48 to 440 Hz, which can deliver approximately 400 VA. A removable jumper board in the power module (A7) provides selection of the line voltage to be used (Figure 1).

CAUTION

Before placing this instrument in operation, ensure that the operating voltage visible in the power module window (Figure 1) agrees with the line voltage being used. See Figure 3-2, Proper intensity Adjustment, to avoid damaging CRT.

Page 2-1, Paragraph 2-11, (Cont'd)

Page 2-1, Paragraph 2-12,
Replace with the following: FUSE SELECTION. When operating from a 100V or 125V source, use a 4A slow-blow fuse. When operating from a 220V or 240V source, use a 2A slow-blow fuse.
Page 4-1, Figure 4-1,
Change POWER INPUT to: 100, 120, 220 or 240 VOLTS.
Page 6-2, Table 6-2,
Add: A7, HP Part No. 5060-9421, A: power module.
Page 6-3, Table 6-2,
Δ Delete: FL1, J3.

CHANGE 9 (Cont'd)

Page 6-3, Table 6-2, (Cont'd)
MP18: Change to HP Part No. 00141-60206, Panel assy: rear.

Page 6-4, Table 6-2,
△ Delete: MP51.
Add: MP130, HP Part No. 5020-8122, Board: jumper p/o A7.

Page 6-5, Table 6-2,
Delete: S2.
T1: Change to HP Part No. 9100-3285.
△ W1: Change to HP Part No. 8120-1538.
W2: Change to HP Part No. 00141-6131.
△ Add: A2C20, HP Part No. 0160-0407, TQ1, C: fxd cer 1000 pF 10% 500V.

Page 8-9, Figure 8-6,
Replace power input (line voltage) section with Figure 2.
△ Add C20 (1000 pF) between CR17 plate and ground.

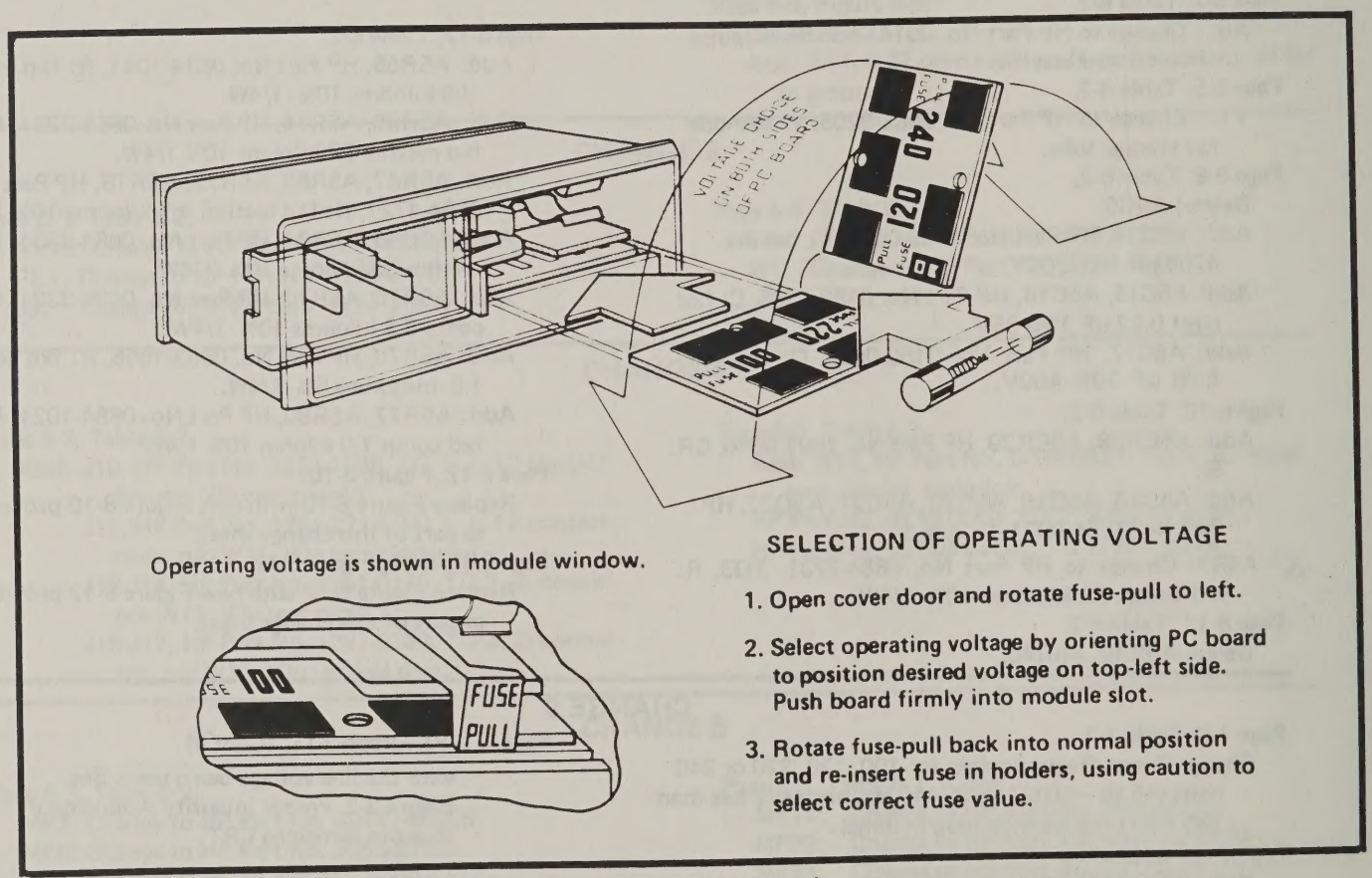

240
120
100
FUSE
PULL
Operating voltage is shown in module window.
SELECTION OF OPERATING VOLTAGE
1. Open cover door and rotate fuse-pull to left.
2. Select operating voltage by orienting PC board to position desired voltage on top-left side. Push board firmly into module slot.
3. Rotate fuse-pull back into normal position and re-insert fuse in holders, using caution to select correct fuse value.

Figure 1. Voltage Selection

CHANGE 9 (Cont'd)

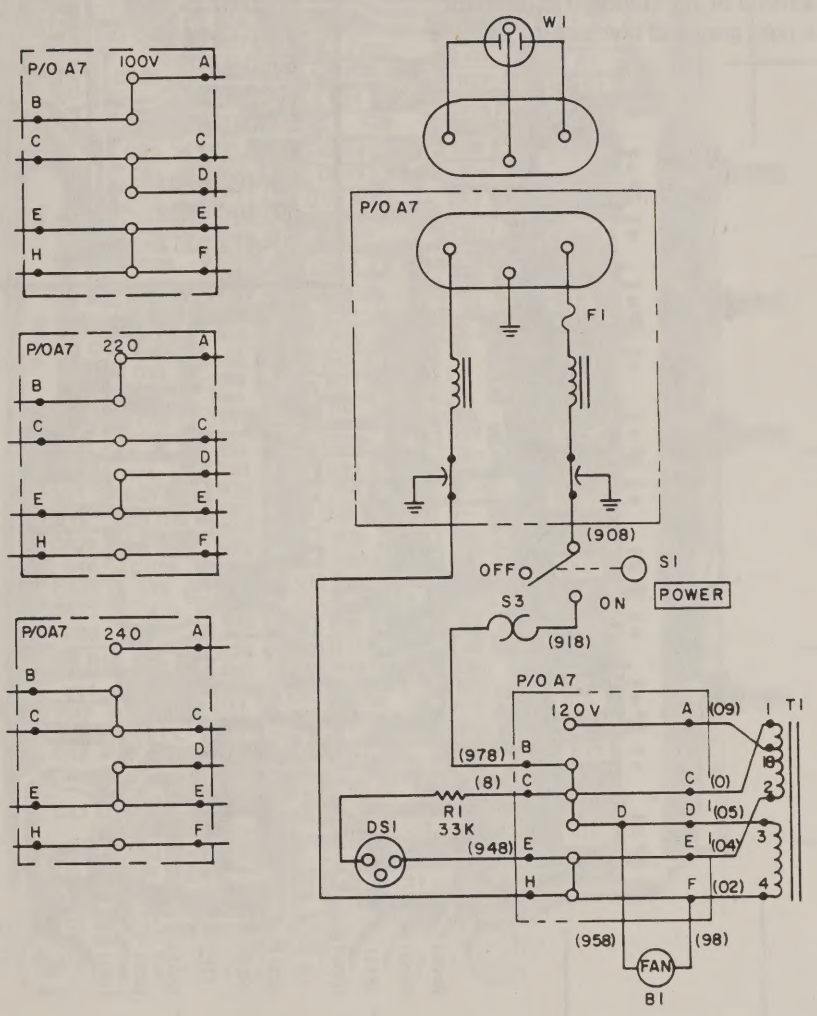


Figure 2. Power Module A7

OPTIONS

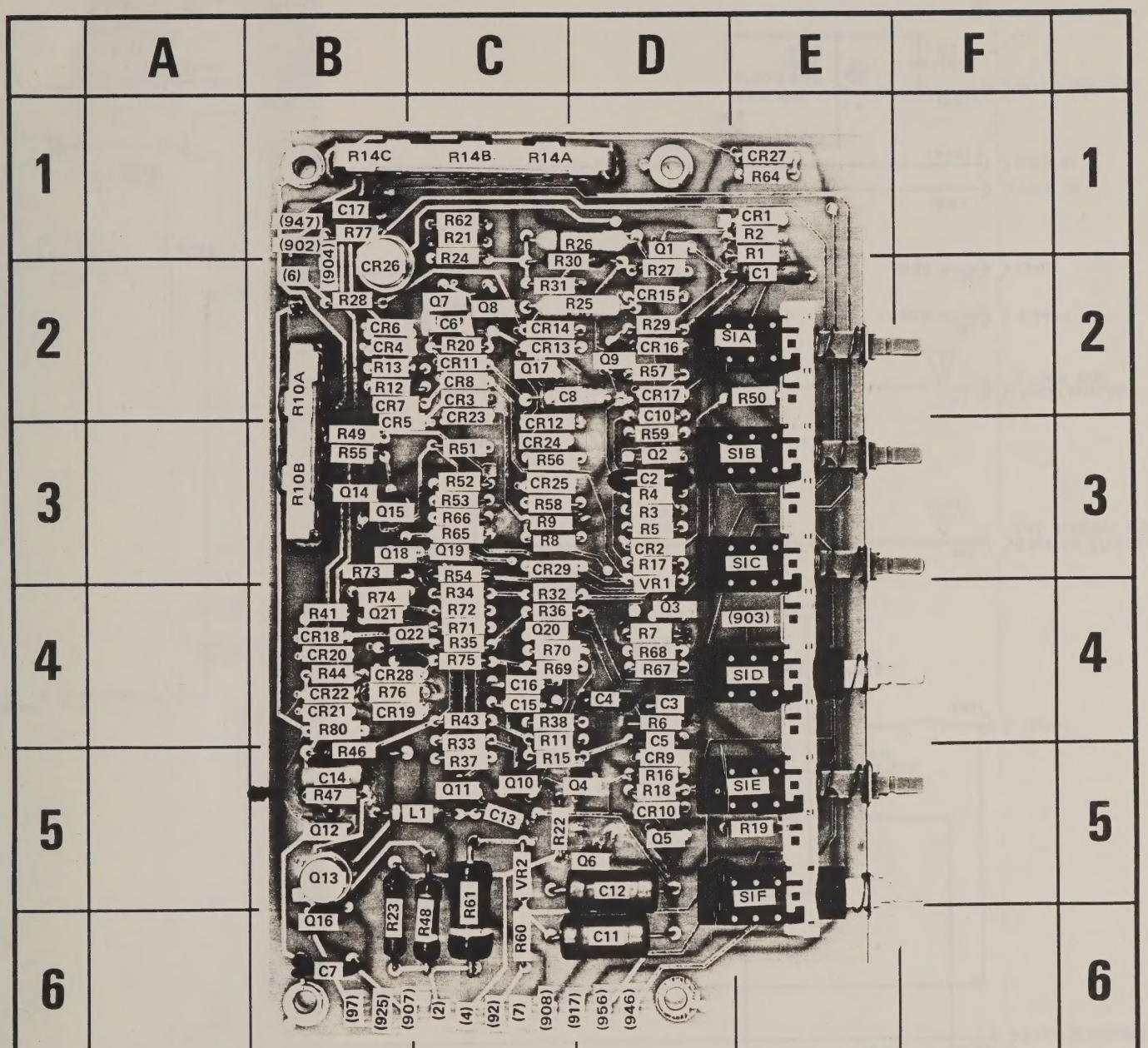
Page 7-1/7-2, Paragraph 7-4,

Delete: One option is presently offered for the instrument.

Add: Paragraph 7-4b. OPTION X95: This option replaces the color scheme of the standard equipment with one having a light gray and black color scheme.

Table 7-3. Replaceable Parts for Option X95

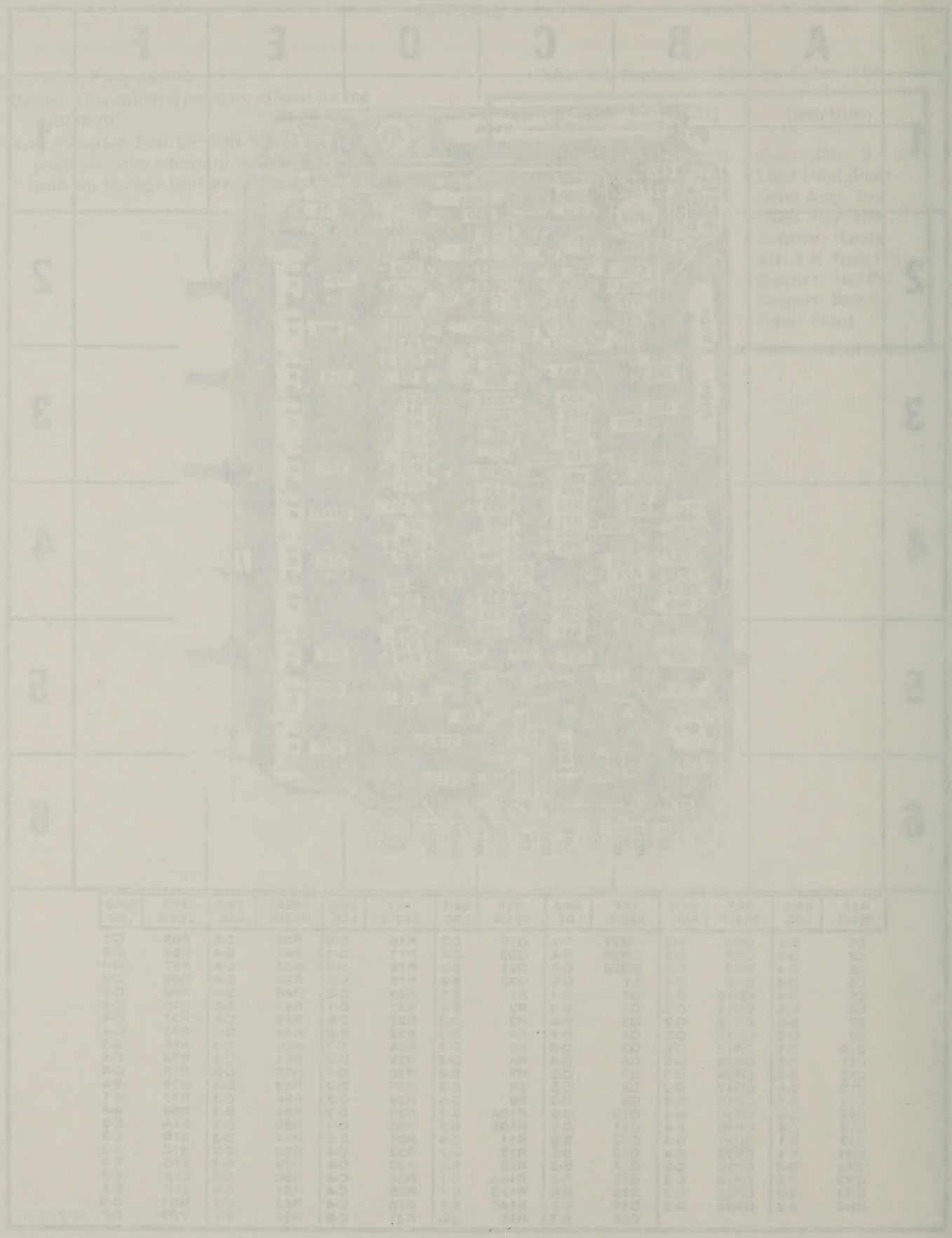
HP Part No.	TQ	Description
5000-0747	2	Cover: Side - 8 x 16
5060-0504	1	Light Shld: Short
5060-0740	1	Cover Assy: Top
5060-0752	1	Cover Assy: Btm
5060-0765	1	Retainer: Handle
5060-0777	1	Kit: 8 H Rack Mt.
00140-24701	1	Support: Top Pnl
00140-24702	1	Support: Btm Pnl
00141-00212	1	Panel: Front

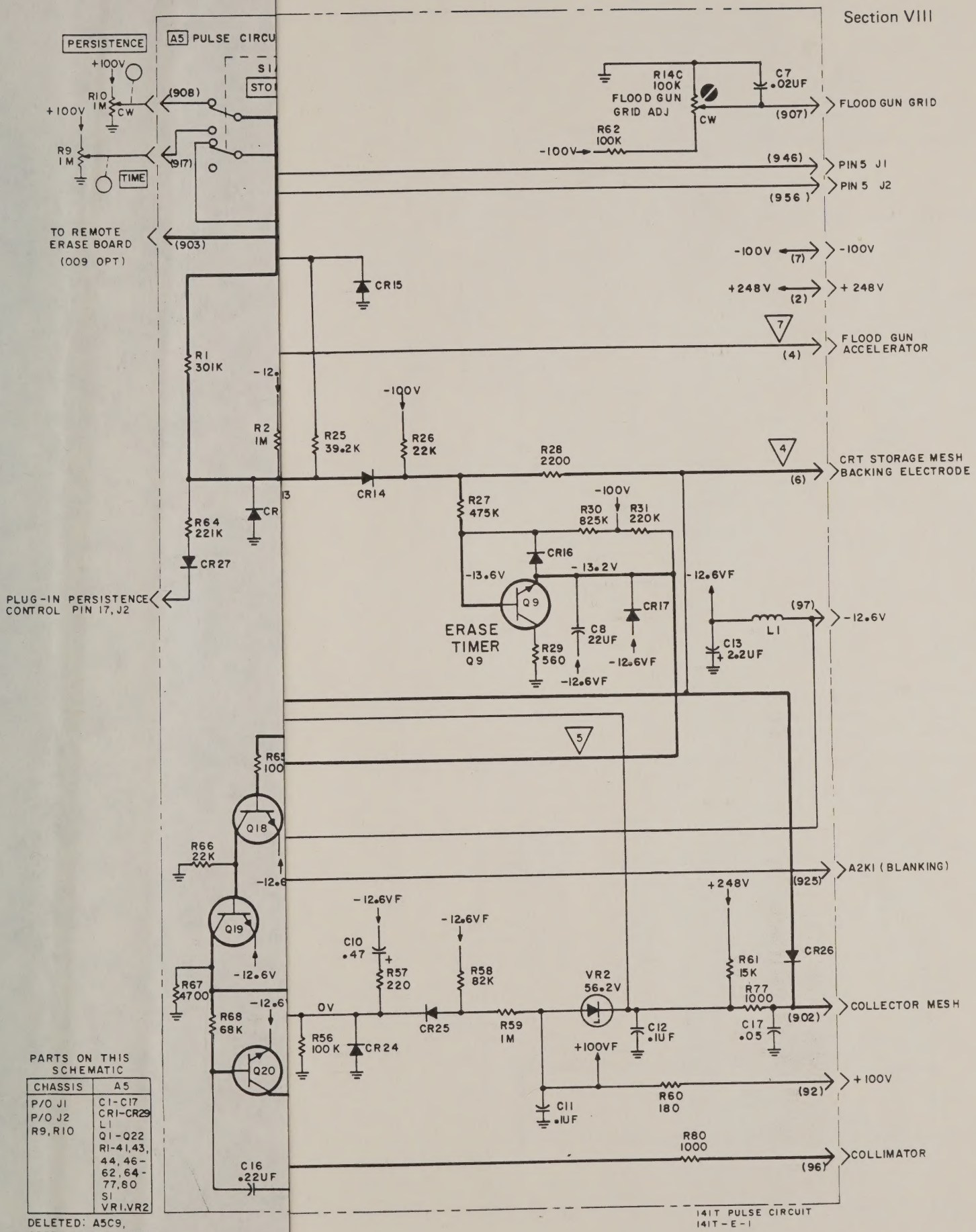


REF DESIG	GRID LOC	REF DESIG	GRID LOC	REF DESIG	GRID LOC	REF DESIG	GRID LOC	REF DESIG	GRID LOC	REF DESIG	GRID LOC	REF DESIG	GRID LOC
C1	E-2	CR6	B-2	CR27	E-1	Q19	C-3	R16	D-5	R38	C-4	R65	C-3
C2	D-3	CR7	B-2	CR28	B-4	Q20	C-4	R17	D-3	R41	B-4	R66	C-3
C3	D-4	CR8	C-2	CR29	C-3	Q21	B-4	R18	D-5	R43	C-4	R67	D-4
C4	D-4	CR9	D-5	L1	C-5	Q22	B-4	R19	E-5	R44	B-4	R68	D-4
C5	D-4	CR10	D-5	Q1	D-1	R1	E-1	R20	C-2	R46	B-4	R69	C-4
C6	C-2	CR11	C-2	Q2	D-3	R2	E-1	R21	C-1	R47	B-5	R70	C-4
C7	B-6	CR12	C-2	Q3	D-4	R3	D-3	R22	C-5	R48	C-6	R71	C-4
C8	D-2	CR13	C-2	Q4	D-5	R4	D-3	R23	B-6	R49	B-3	R72	C-4
C10	D-2	CR14	C-2	Q5	D-5	R5	D-3	R24	C-1	R50	E-2	R73	B-3
C11	D-6	CR15	D-2	Q6	D-5	R6	D-4	R25	D-2	R51	C-3	R74	B-4
C12	D-5	CR16	D-2	Q7	C-2	R7	D-4	R26	D-1	R52	C-3	R75	C-4
C13	C-5	CR17	D-2	Q8	C-2	R8	C-3	R27	D-2	R53	C-3	R76	B-4
C14	B-5	CR18	B-4	Q9	D-2	R9	C-3	R28	B-2	R54	C-3	R77	B-1
C15	C-4	CR19	B-4	Q10	C-5	R10A	B-2	R29	D-2	R55	B-3	R80	B-4
C16	C-4	CR20	B-4	Q11	C-5	R10B	B-3	R30	D-1	R56	C-3	S1A	E-2
C17	B-1	CR21	B-4	Q12	B-5	R11	C-4	R31	C-2	R57	D-2	S1B	E-3
CR1	E-1	CR22	B-4	Q13	B-5	R12	B-2	R32	C-4	R58	C-3	S1C	E-3
CR2	D-3	CR23	C-2	Q14	B-3	R13	B-2	R33	C-4	R59	D-3	S1D	E-4
CR3	C-2	CR24	C-3	Q15	B-3	R14A	C-1	R34	C-4	R60	C-6	S1E	E-5
CR4	B-2	CR25	C-3	Q16	B-6	R14B	C-1	R35	C-4	R61	C-5	S1F	E-6
CR5	B-2	CR26	B-2	Q17	C-2	R14C	B-1	R36	C-4	R62	C-1	VR1	D-3
				Q18	B-3	R15	C-5	R37	C-5	R64	E-1	VR2	C-5

141T-R-1

Figure 8-10. Component Identification, Pulse Circuit A5



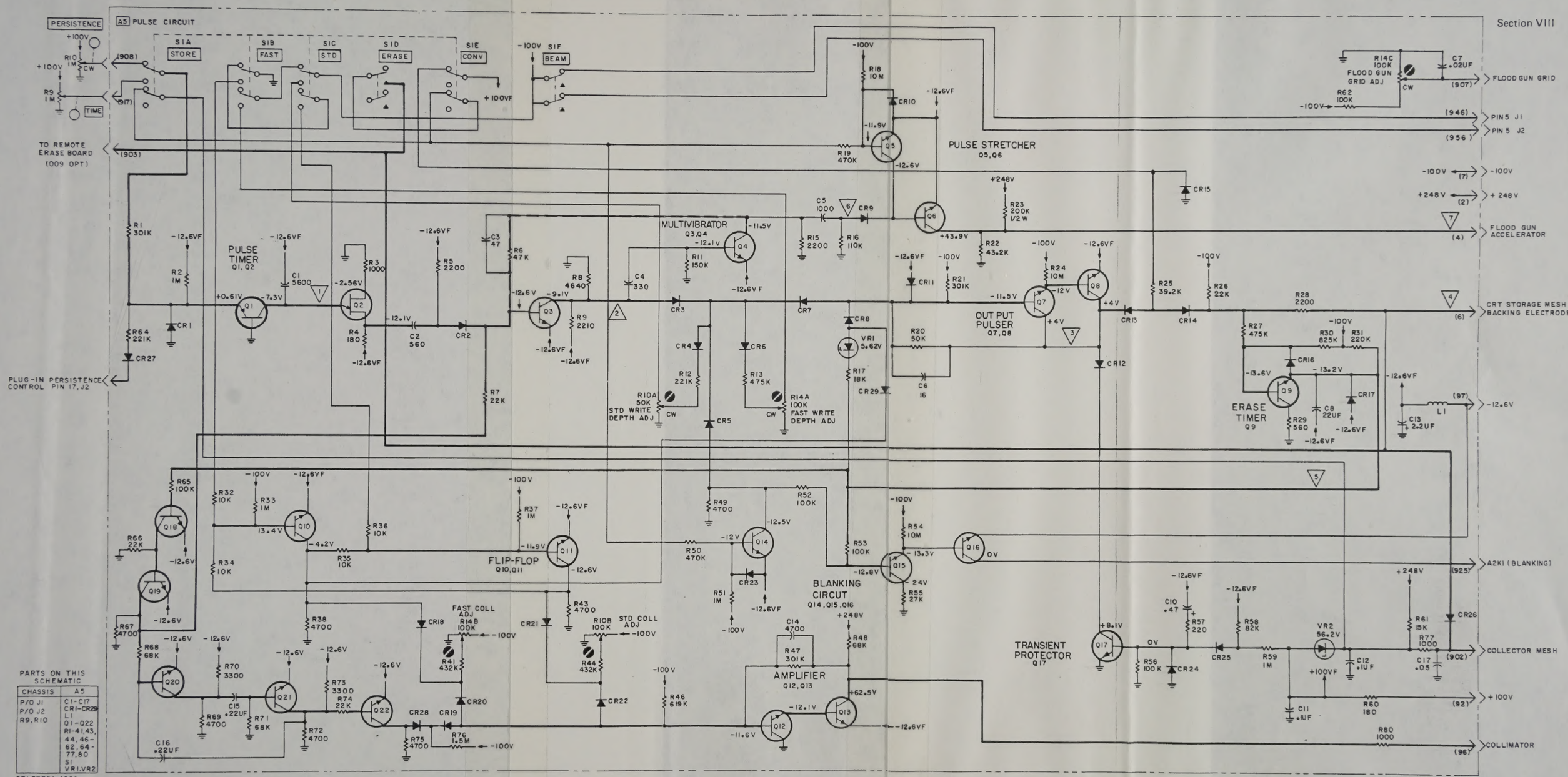


PARTS ON THIS SCHEMATIC

CHASSIS	A5
P/O J1 P/O J2 R9, R10	C1-C17 CR1-CR29 L1 Q1-Q22 R1-41, 43, 44, 46-62, 64-77, 80 S1 VR1, VR2

DELETED: A5C9, A5R39, A5R40, A5R42, A5R45, A5R63

Figure 8-12. Pulse Circuit Schematic



PARTS ON THIS SCHEMATIC

CHASSIS	A5
P/O J1	C1-C17
P/O J2	CR1-CR29
R9, R10	L1
	Q1-Q22
	R1-41,43, 44, 46-62, 64-77, 80
	S1
	VR1, VR2

DELETED: A5C9, A5R39, A5R40, A5R42, A5R45, A5R63

141T PULSE CIRCUIT 141T-E-1

Figure 8-12. Pulse Circuit Schematic